AMENDMENTS TO THE CLAIMS

1. (original)An electrode comprising:

an electrically conductive matrix containing a disulfide group, wherein an S—S bond of the disulfide group is cleaved by electrochemical reduction and reformed by electrochemical oxidation; and

a plurality of carbon nanotubes being substantially disentangled and dispersed in the electrically conductive matrix.

2. (original)An electrode of claim 1 wherein the electrode is substantially free of an aggregate of the carbon nanotubes.

3. (original)An electrode of claim 1 wherein the carbon nanotubes have an average diameter of 3.5 to 200 nanometers and an average length of 0.1 to 500 micrometers.

4. (original)An electrode of claim 1 wherein the carbon nanotubes have an average diameter of 5 to 30 nanometers and an average length of 100 to 10000 times the diameter thereof.

5. (original)An electrode of claim 1 wherein the electrode contains 0.5 to 6 percent by weight of the carbon nanotubes based on a sum of the electrically conductive matrix and the carbon nanotubes.

6. (original)An electrode of claim 1 wherein the electrode contains 1 to 4 percent by weight of the carbon nanotubes based on a sum of the electrically conductive matrix and the carbon nanotubes.

7. (original)An electrode of claim 1 wherein the electrode has a sheet configuration.

8. (original)An electrode of claim 1 wherein the electrically conductive matrix contains an electrically conductive polymer and an organic compound having the disulfide group.

9. (original)An electrode of claim 8 wherein the electrically conductive polymer comprises a polymer represented by a formula:

—[Ar—NH]$_n$—

wherein Ar is aryl, and n is an integer.

10. (original)An electrode of claim 8 wherein the organic compound contains a 5 to 7 membered, heterocyclic ring containing 1 to 3 heteroatoms consisting of a nitrogen atom and a sulfur atom.

11. (original)An electrode of claim 1 wherein the electrically conductive matrix contains an electrically conductive polymer having the mercapto group which is capable of forming

disulfide group.

12. (original)A method for producing disentangled carbon nanotubes, said method comprising the steps of:

adding a plurality of aggregates of carbon nanotubes to a liquid; and

providing sheer force onto the liquid for disentangling the aggregates of carbon nanotubes therein.

13. (original)A method of claim 12 wherein the providing step comprises passing the liquid through a narrow gap at a high speed.

14. (original)A method of claim 13 wherein the providing step comprises adding the liquid into a homogenizer.

15. (original)A method of claim 14 wherein the homogenizer comprises:

a stator;

a rotor wherein the stator and the rotor define a narrow gap therebetween; and

at least one blade being fixed to one of the stator and the rotor and being disposed in the narrow gap.

16. (original)A method of claim 12 wherein the liquid comprises at least one of an organic solvent and water.

17. (currently amended)A lithium battery, comprising:

(a) a cathode ~~having: an electrically conductive matrix containing a disulfide group, wherein an S—S bond of the disulfide group is cleaved by electrochemical reduction and reformed by electrochemical oxidation; and~~

~~a plurality of carbon nanotubes being substantially disentangled and dispersed in the electrically conductive matrix;~~ comprising the electrode as claimed in claim 1;

(b) an anode having an active material for releasing lithium ions; and

(c) an electrolyte being disposed between the cathode and the anode.

18. (original)A lithium battery of claim 17 wherein the cathode is substantially free of an aggregate of the carbon nanotubes.

19. (original)A lithium battery of claim 17 further comprising:

(d) a cathode current collector contacting with the cathode; and

(e) an anode current collector contacting with the anode.

20. (original)A lithium battery of claim 19 wherein the cathode current collector, the cathode, the electrolyte, the anode, and the anode current collector have a layered structure and are

laminated each other in this order.

21. (original)A lithium battery of claim 17 wherein the cathode has a thickness ranging from 5 to 500 micrometers.

22. (original)A lithium battery of claim 17 wherein the cathode has a thickness ranging from 10 to 100 micrometers.

23. (original)A lithium battery of claim 19 wherein the cathode current collector has a sheet configuration.

24. (original)A lithium battery of claim 19 wherein the cathode current collector comprises metallic foil.

25. (original)A lithium battery of claim 17 wherein the carbon nanotubes have an average diameter of 3.5 to 200 nanometers and an average length of 0.1 to 500 micrometers.

26. (original)A lithium battery of claim 17 wherein the cathode contains 0.5 to 6 percent by weight of the carbon nanotubes based on a sum of the electrically conductive matrix and the carbon nanotubes.

27. (original)A lithium battery of claim 17 wherein the electrically conductive matrix contains an electrically conductive polymer and an organic compound having the disulfide group.

28. (original)A lithium battery of claim 27 wherein the electrically conductive polymer comprises a polymer represented by a formula:

—[Ar—NH]$_n$—

wherein Ar is aryl, and n is an integer.

29. (original)A lithium battery of claim 17 wherein the electrically conductive matrix contains an electrically conductive polymer having the disulfide group.

30. (original)A lithium battery of claim 17, wherein the electrolyte comprises at least one of a solid electrolyte and a gel electrolyte.